MASTER
NEGATIVE
NO. 94-82260-20

COPYRIGHT STATEMENT

The copyright law of the United States (Title 17, United States Code) governs the making of photocopies or other reproductions of copyrighted materials including foreign works under certain conditions. In addition, the United States extends protection to foreign works by means of various international conventions, bilateral agreements, and proclamations.

Under certain conditions specified in the law, libraries and archives are authorized to furnish a photocopy or other reproduction. One of these specified conditions is that the photocopy or reproduction is not to be "used for any purpose other than private study, scholarship, or research." If a user makes a request for, or later uses, a photocopy or reproduction for purposes in excess of "fair use," that user may be liable for copyright infringement.

The Columbia University Libraries reserve the right to refuse to accept a copying order if, in its judgement, fulfillment of the order would involve violation of the copyright law.

Author:
U.S. National Recovery Administration
Title:
Material bearing on the gear manufacturing...
Place:
[Washington, D.C.]
Date:
1933

94-82260-20
MASTER NEGATIVE #

COLUMBIA UNIVERSITY LIBRARIES
PRESERVATION DIVISION

BIBLIOGRAPHIC MICROFORM TARGET

ORIGINAL MATERIAL AS FILMED - EXISTING BIBLIOGRAPHIC RECORD

BUSINESS
321
Un35

U. S. National recovery administration. Research and planning division.
Material bearing on the gear manufacturing industry. Prepared by Division of economic research and planning, Alexander Sachs, director, with the assistance of J. A. Hanley and R. von Huhn. 1st ed. [Washington, 1933.]
cover-title, 8 l. tables, diagr. 27cm.

Type-written (carbon copy)

RESTRICTIONS ON USE:

TECHNICAL MICROFORM DATA

FILM SIZE: 35mm REDUCTION RATIO: 12x IMAGE PLACEMENT: (IA) IIA IB IIB

DATE FILMED: 11-22-94 INITIALS: PB

TRACKING # : MSH 02946

FILMED BY PRESERVATION RESOURCES, BETHLEHEM, PA.

2.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PM-MGP 13″x18″
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC

200 mm

150 mm

100 mm

1.0

1.1

1.25

1.4

1.6

1.8

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

2.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

2.5 mm

A5

A4

A3

PRECISION℠ RESOLUTION TARGETS

Century A&P

1303 Geneva Avenue
St. Paul, MN 55119

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

4.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

3.5 mm

U.S. NATIONAL RECOVERY ADMINISTRATION.

MATERIAL BEARING ON THE GEAR MANUFACTURING INDUSTRY.

T 331 - U35

D321 Un35
Columbia University
in the City of New York
THE LIBRARIES

School of Business

117-22

National Recovery Administration

(Dupl)

School of Business Library
Columbia University

MAR 18 1941

MATERIAL BEARING ON
THE GEAR MANUFACTURING INDUSTRY

Prepared by

DIVISION OF ECONOMIC RESEARCH AND PLANNING

Alexander Sachs
Director

With the Assistance of J. A. Hanley and R. von Huhn

COLUMBIA
UNIVERSITY
LIBRARY

First Edition
11/10/33

3/31/41 r.c.

JUL 12 1944 PCR

MATERIAL BEARING ON THE GEAR MANUFACTURING INDUSTRY

Introduction

Statistical material bearing on this industry is limited to that submitted by the American Gear Manufacturing Association, which claims to represent 90% of the entire industry measured by dollar volume of business.

Description of Industry

The gear manufacturing industry is defined to mean the manufacture for sale of cut-tooth gears, speed reducers, cut-tooth sprockets and other similar power-transmission media. These products are essential parts of, or accessories to, machinery and mechanical devices and represent a vital element in the continuity of industrial production. The gear manufacturer renders the service of a maintenance and repair shop to all industry. The industry whose market consists of machine manufacturers and machine users is necessarily subject to the same extreme fluctuations in demand for its products.

Sales

Annual sales of the industry in 1932 had declined to one-fifth of the 1929 level. In 1929 sales were $34,642,000, and in 1932, $7,348,000 - a 78.8% decline. The industry anticipates that sales for 1933 will amount to $10,000,000,

which will represent an increase of 36.1% over 1932. The following table shows the estimated values of aggregate invested capital, production capacity and annual sales for the years indicated.

Year	Invested Capital (1000's)	Production Capacity (1000's)	Annual Sales (1000's)	Per Cent Decrease of sales
1928	$45,900	$38,000	$24,893	
1929	46,495	40,000	34,642	+ 39.2
1930	49,798	40,000	23,879	- 31.1
1931	47,844	38,000	15,741	- 34.1
1932	44,538	37,000	7,348	- 53.3
1933		37,000	10,000	+ 36.1

Census of Manufactures reports production of gears, other than motor vehicle gears, for the years 1929 and 1931 as follows:

1929	$30,326,000
1931	14,143,000

These values do not include values of all the items covered by the submitted code. They are offered here as evidence of the reasonableness of the trade figures. The declines shown in both sets of figures between 1929 and 1931 are in close agreement, 54.8% in the sales figures submitted by the trade and 53.9% in the Census figures.

Employment

Employment in the industry, based on figures supplied by the trade association covering 90 per cent of the industry, declined steadily from 7,976 in 1929 to 3,942 in 1932 representing a decrease of 50.6 per cent. An increase of 29.7 per cent is shown in 1933 over 1932 attributed partly to the shortening of hours and partly to an upswing in production. Further information furnished by the industry in regards to employment shows there has been an increase of 45 per cent in the number of workers for the four-month period of May to August over the first four months in 1933.

Number of Wage Earners

Year	Trade Association a/ Estimate	Total Number of Wage Earners b/	Per cent Change
1928	6,168	6,853	
1929	7,178	7,976	+ 16.4
1930	6,087	6,763	- 15.2
1931	4,693	5,214	- 22.9
1932	3,548	3,942	- 24.4
1933	4,600	5,111	+ 29.7

a/ Represents 90 per cent of the industry.
b/ Column 1 projected to represent total employment.

Average Hours

The continued decline in production and employment from 1929 to 1932 was accompanied by a decrease in working hours per week. The average hours per week in 1929 were 52 and in 1932, 40 or a decrease of 23.1 per cent.

Year	Average Hours Per Week
1928	51
1929	52
1930	48
1931	44.5
1932	40
1933	40

Estimated Man-hours and Effect of 40-Hour Provision

The effect of the 40-hour provision with production nearer normal levels may be estimated on a basis of total man-hours per week in 1931 divided by the number of hours prescribed by the code.

Average man-hours per week declined steadily from 414,752 in 1929 to a minimum of 157,680, or 62 per cent in 1932. Since then, average man-hours per week have increased to 204,440 or 29.7 per cent.

The estimated man-hours shown in the accompanying table are based on figures reported by the industry. The average hours were multiplied by the number of wage earners to give total man-hours.

Man-Hours Per Week

Year	Number of Wage Earners	Average Hours Per Week	Total Man-Hours Per Week
1929	7,976	52	414,752
1930	6,763	48	324,624
1931	5,214	44.5	232,023
1932	3,942	40	157,680
1933	5,111	40	204,440

If we assume the 232,023 man-hours for 1931 to be representative of the volume of production for that year and a

reasonable measure of man-hour requirements in a more normal period, the adoption of an actual 40-hour week would require a force of approximately 5,800 employees or employment of 72.7 per cent of the 1929 working force or 11.2 per cent more than the 1931 force.

However, owing to the impossibility of all employees of each plant working the maximum 40 hours, the average work week will be shorter, say 36 hours, assumed effective hours and employment correspondingly greater, viz., 6,445 workers to produce the 1931 volume.

Employees Required to Produce 1931 Volume
(232,023 man-hours)

Nominal hours per week	Assumed effective hours per week	Approximate number of employees required per week a/		Per cent of 1929 employment level (7,976 = 100)	
		Nominal hours	Assumed effective hours	Nominal Hours	Assumed effective hours
30	27.0	7,735	8,590	97.0	107.7
36	32.4	6,445	7,160	80.8	89.8
40	36.0	5,800	6,445	72.7	80.8

a/ The approximate number of employees required were computed on the basis of the nominal hours per week and the assumed effective hours per week.

With production remaining at present levels no additional employment will be created by the 40-hour week as the industry is already operating under these hours. The reduction of hours for those plants running more than 40 hours doubtless resulted in the increased employment noted between May and August.

Adequacy of Proposed Maximum Hours

An adjustment of hours to take up the slack of unemployment in this industry is quite impractical. With increased purchasing power released through the general adoption of other codes, stimulation in the activity of industries furnishing the demand for the products of this industry will automatically act to increase employment here. This industry should not be required to carry workers whose lay-off has been due entirely to the inactivity of its customers. The 40-hour provision is in line with provisions in other capital goods codes and represents a 23.1 per cent reduction from the average hours of 1929.

Average Wages

No data are available on wages for the industry prior to 1933. The industry, however, states that the average earnings per week in the four-month period of May to August, 1933, increased to $21.95 from $19.36 in the first four-months period, representing a gain of 13.5 per cent.

The average weekly earnings in 1929 for all wage earners under the group "Machines and Machine Tools" as reported by the National Industrial Conference Board were $31.42, which is representative of this industry.

The reported average weekly earnings for the period May to August, 1933, represent a decline of 30 per cent.

Frequency Distribution by Hourly Earnings

A special report of the Bureau of Labor Statistics on Hours and Wages in the Foundries and Machine Shops 1931, shows number of workers receiving specified hourly earnings. This distribution is perhaps indicative of workers in the gear industry. This frequency shows that in 1931, 14.6 per cent of unskilled workers were receiving less than 40 cents per hour and that only 4.5 per cent of the skilled and semi-skilled workers received less than the 40 cents proposed as a minimum for this industry. Doubtless these ratios have increased since 1931 and many more workers would have been grouped in these lower brackets this year. In any event the number of workers affected by the minimum would not be great and the increase in payroll therefore negligible.

This distribution demonstrates the preponderance of highly paid workers in the industry in the fact that over 40 per cent of the skilled group received more than 65 cents per hour.

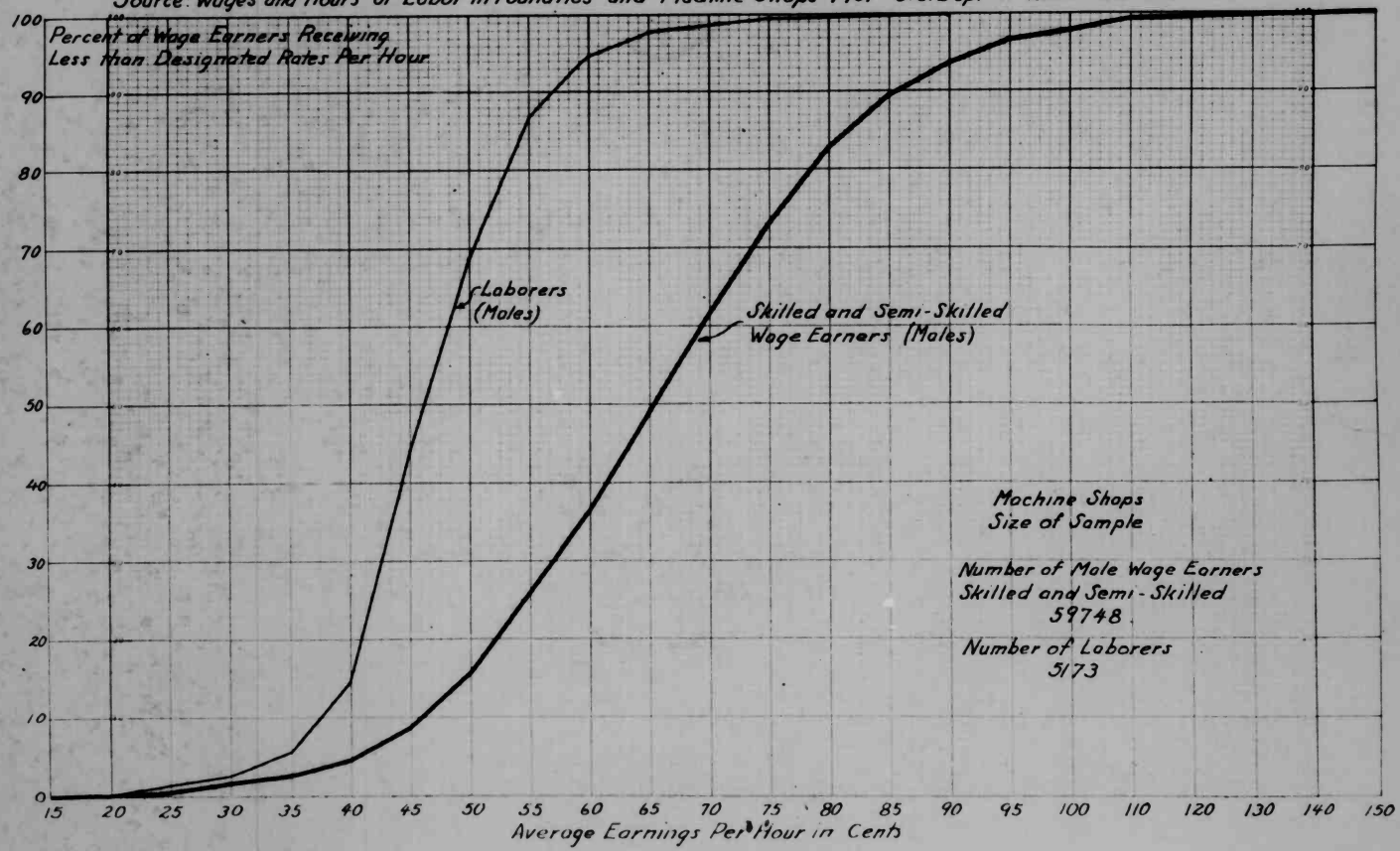
Effect of Minimum Wage Adoption

The lack of any data later than 1931 showing the number of workers which may be affected by the minimum wage renders it impossible to estimate even approximately the effect of the proposed 40 cent minimum on the payrolls of the industry and the increased labor cost.

Exhibit E.

CLASSIFIED EARNINGS PER HOUR IN MACHINE SHOPS 1931
CUMULATIVE BASIS
SKILLED AND SEMI-SKILLED WAGE EARNERS AND LABORERS

Source: Wages and Hours of Labor in Foundries and Machine Shops 1931 U.S. Dept of Labor Bulletin 570



COLUMBIA UNIVERSITY LIBRARIES

This book is due on the date indicated below, or at the expiration of a definite period after the date of borrowing, as provided by the rules of the Library or by special arrangement with the Librarian in charge.

DATE BORROWED	DATE DUE	DATE BORROWED	DATE DUE
May25 54			
C28(1141)M100			

COLUMBIA UNIVERSITY LIBRARIES
0044267649

MSH 02946

NEH AUG 11 1994

D321 Un35

U.S. National recovery administration.
Material bearing on the Gear Manufacturing Industry.

May 25 54 J P Logan.
502A Business

D321 Un35

SEP 13 1944

END OF
TITLE